

# ESH442 DOT Awareness and Inner Container Preparation Training

## General Information

You may be asked to prepare or coordinate shipping of research samples, materials or just equipment as part of your job. These activities may be subject to the U.S. Department of Transportation, International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) rules. This includes filling of receptacles that contain samples, providing the correct Material Safety Data Sheet/Safety Data Sheet for a material, or placing batteries correctly into equipment.

While the Shipping Department handles the vast majority of compliance with these regulations, your part in the process is just as important. For materials or equipment that can't be repackaged, your work is the first part of the overall compliance process.



## Objective

The objective of this course is to become aware of the governmental regulations and Argonne's processes for inner container preparation and shipping of research samples, materials or equipment.

## SAMPLE MATERIAL IDENTIFICATION

In order to select the appropriate packaging for your chemical, you must know the characteristics of the materials you are preparing. This information can be found in a Material Safety Data Sheet (MSDS) or a Safety Data Sheet (SDS), which will replace the MSDS after June 1, 2015. The correct MSDS/SDS must accompany each material being shipped off site.

In order for the shipping department to correctly package any material, you must be sure to mark containers or equipment so they can be identified and matched to the correct MSDS/SDS.



## SELECTING A CONTAINER FOR YOUR SAMPLE OR MATERIAL

Before filling a receptacle you want to ship with a sample or material, you must be sure that you are choosing one that will withstand the conditions in an aircraft cargo hold. This includes withstanding the extreme variation of pressure from altitude and temperature ranges (regardless of season). The contents must also be compatible with the materials you want to place in it to ensure no chemical or galvanic reaction occurs.

Inner containers must be obtained through the AMOS or PARIS system, and documentation must be provided by the supplier to ensure it meets these requirements. If the receptacle you use can't be verified as complying with the regulations, your shipment will be delayed. Prior to filling, the inner container must be inspected to ensure that the container and its closures are in proper condition to contain the materials inside.

Contact the shipping department for specific help in determining inner container specifications.

## FILLING YOUR CONTAINER

When filling inner containers with liquids, sufficient ullage (headspace) must be left to ensure no leakage or permanent distortion of the container will occur during transportation from expansion resulting from pressure or temperature changes. To comply with these requirements the Argonne policy is that containers are not filled greater than 80% of its volume capacity.



## CLOSING YOUR CONTAINER

You must choose a closure that is appropriate for the container, is compatible with your material, will withstand the pressure and temperature ranges for air transport and remain hermetically sealed during transportation. Prior to transfer to Building 46 for shipment, you must securely close the container.

Note: The final closure of the inner container will be done by shipping personnel after a thorough review of the materials and inner containers has been completed.



## GETTING YOUR MATERIALS TO BUILDING 46

Follow [LMS-PROC-202](#) to transfer your material to Building 46 for review and additional preparation for shipping.

Make sure that all shipment documentation (including a MSDS/SDS) accompanies the movement of the material to Building 46. Examine all filled containers to identify and mitigate any leaks and remove any residue from the outside of each container. Any inner containers found to be leaking at Building 46 will be returned to you, which may delay your shipment. Contact the shipping department if you have any questions prior to movement.

## **SAFETY & SECURITY ISSUES**

In line with Argonne's security posture, refrain from discussing details of any proposed transfer/shipment with personnel who do not have the need to know.

Be aware that you may be contacted by Argonne emergency management personnel if an incident occurs involving your shipment during transportation.

## **This concludes ESH442 DOT Awareness and Inner Container Preparation Training.**

You will now be directed to the learning measurement exercise.  
Please click the [here](#) to proceed.